

Studies on North American Ants. II. Myrmecina

WILLIAM L. BROWN, JR., Cornell University,
Ithaca, New York 14850

The myrmicine genus *Myrmecina* contains at least 25 described and undescribed species, most of which inhabit the Indo-Australian region. A few species form a close-knit complex of forms, widely distributed in the temperate parts of Eurasia and North America, that we may call the *graminicola* group. Brown (1949, 1951) presented revisionary notes on this group; insofar as these papers dealt with the North American representatives of the group, the main result was the synonymy of three "subspecies" or "varieties" of *M. americana* (*brevispinosa*, *texana*, *quadrispina*). The types of these forms match individual or nest variants found throughout eastern temperate North America, and despite vague and partly contradictory indications to the contrary, the names do not correspond to geographical entities that could be classified as "races" by those who recognize this category in the sense of Mayr (1942) and Creighton (1950), though the latter does attempt to maintain *brevispinosa* and *texana* in a racial framework.

Smith (1948) had meanwhile complicated the picture by describing *M. californica* from Santa Barbara, California, based on a single worker that is small and with unusually reduced sculpture, and is lighter and more reddish in color. Smith also mentioned the "tridentate" (trituberculate) anterior clypeal border and flattened scape bases as characteristic of *M. californica*, but as Snelling (1965) has shown, these last two characters vary locally in California, and may be present or absent there in different samples. Brown (1951) stated,

. . . series from the southwestern United States average smaller, are often lighter in color, have smaller propodeal teeth and are more lightly sculptured. An extreme in these respects is reached by M. R. Smith's *M. californica*, which may, when collections from the West are more complete, prove to be one end of a gradual cline.

In this same paper, Brown put into evidence two small, smooth, light-colored *Myrmecina* workers taken by Wray with the Berlese funnel at Pittsboro, North Carolina. Under the circumstances, we do not know what the rest of the Pittsboro nest series was like. Nevertheless, these two workers fit the *M. californica* concept in sculpture and color, and their propodeal armament is greatly reduced. Since that time, on 29 August 1954, a very significant nest of *Myrmecina americana* has been found by Brown at Lexington, Massachusetts. This series consisted of a nest queen, a few winged queens and males, about 50 workers, and brood of all stages, found under a rock in a hilltop woodland. Of the workers, the three smallest ones are light in color and have definitely reduced sculpture and propodeal spines. These specimens are smoother than is the *californica* type. In the papers cited, Brown has already given evidence to show that reduction of sculpture, pigmentation and propodeal teeth are allometric characters at least partly phenotypically enforced by environmental deficiencies (such as low food supply). Though these considerations naturally cast doubt on the specific distinctness of *M. californica*, the lack of material from the Far West prevented further analysis of the situation. Recently, however, samples of *Myrmecina* have been taken in Arizona and California that help us to understand the status of the western populations.

The first collection, a single worker taken at Salmon Falls, El Dorado County, California (Wasbauer, 1965), was not much help by itself. I examined it through the kindness of Dr. Wasbauer, and determined it as Smith's *californicus*, though the clypeal and scapal base characters were perhaps not as well-marked as in the type specimen, which was not available for direct comparison. Now Snelling (1965) has reported on 4 more samples, 3 from widespread California localities and one from the Chiricahua Mountains of southeastern Arizona. Through Mr. Snelling's kindness, I have seen most of these specimens, as well as additional material from the Chiricahuas. I have also reviewed other southwestern material, including sam-

ples from Texas and a couple of workers taken at the base of the Huachuca Mountains in extreme southeastern Arizona by R. G. Wesson, most of this in the Museum of Comparative Zoology at Harvard University.

I can confirm Snelling's finding that the new western material is mostly smoother and more shining, and lighter in color, than are eastern samples. The head is also a little narrower on the average in the West, but the cephalic index overlap is broad in the lower and intermediate size classes (Fig. 1). The western populations can therefore be said to differ from the eastern

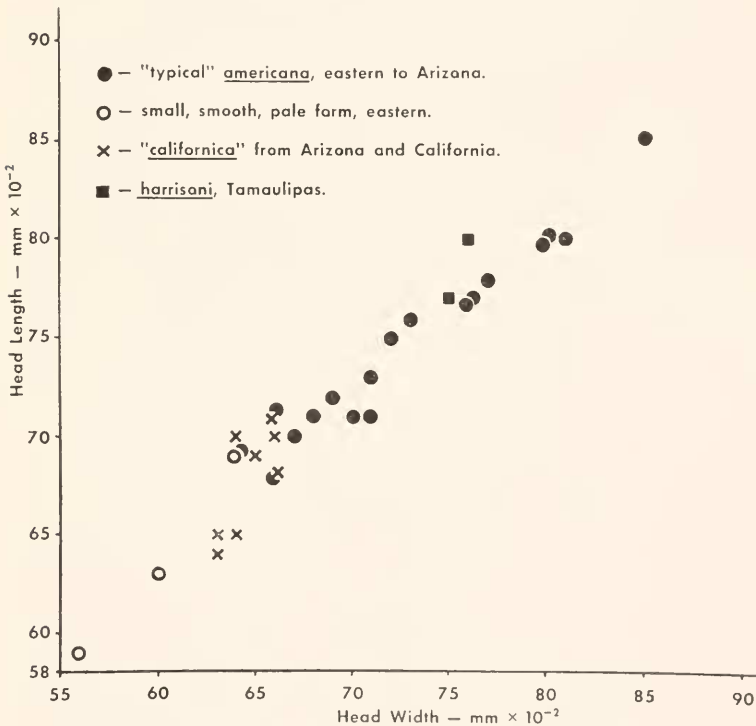


FIG. 1. Scatter diagram to illustrate regression of head length on head width in some samples of North American *Myrmecina* workers. Data and discussion in text.

mainly in average smaller size (and size-dependent characters), but the difference is not absolute.

It is also clear that the western samples differ fairly widely among themselves in all of the characters so far considered as diagnostic. Dark, fairly heavily sculptured variants have been found sympatrically with a smooth, light-colored one in southeastern Arizona, but the same is true of Lexington, Massachusetts, and Pittsboro, North Carolina, in the East. It would not be at all surprising to find that dark, heavily-sculptured *Myrmecina* also occur in favorable (moist) habitats in the Pacific Coast states. Meanwhile, it does not seem to me necessary to dignify the predominantly small, light, weakly sculptured *Myrmecina* samples from the West with a separate name, even a subspecies one. We can easily obscure the real situation by trying to force these populations into a conventional subspecies interpretation. Snelling's (1965) paper gives a key to the "subspecies" *texana*, *californica*, *americana* and *brevispinosa*, but he had not seen my revisionary notes of 1949 and 1951 at the time he wrote. Even so, *americana* and *brevispinosa* as he gives their ranges are sympatric over most of the eastern United States, and (by inference) over much of the central and western part of the country as well. It should be noted, incidentally, that the range of *M. americana* extends well beyond New York, at least into New England. Smith (1951) also cites a record from Montana.

In summary, the synonymy of *M. americana* is as follows:

Myrmecina americana

= subsp. *quadrispina*

= subsp. *texana*

= var. or subsp. *brevispinosa*

= *M. californica*, new synonymy.

The scatter diagram (Fig. 1) is based on the following worker head lengths (clypeus included) and head widths (excluding the eyes) from full-face view. For each specimen, the measurements (in hundredths of mm) are given separated by a diagonal, with head length first, in the form HL/HW.

M. americana: Pittsboro, North Carolina, strays (D. L. Wray), 59/56, 63/60. Lexington, Massachusetts, 29 Aug. 1954, nest series with winged sexes (W. L. Brown), 69/64, 71/71, 68/66, 77/76, 71/68, 76/73, 77/76. Gainesville, Georgia (J. C. Bradley), 80/81, 80/80. Buffalo River Campground, Marion Co., Arkansas, nest series (Cornell University Mexican Field Party, 1965), 85/85, 80/80, 78/77. Schooler Lake, Choctaw Co., Oklahoma (Cornell University Mexican Field Party, 1965), 72/69. Southwestern Research Station, Chiricahua Mts., Arizona, berlesates, L. M. Smith and R. D. Schuster, August 1958, 71/66, 73/71, 69/64, 70/67, 71/70, 75/72, 71/66. Eaton Canyon Wash, Altadena, Los Angeles Co., California, 6 June 1963 (R. R. Snelling), 68/66, 65/64. Pleasant's Valley, California, 5 April 1961 (A. Beck), 70/64, 69/65. 5.4 miles southwest of Winters, Yolo Co., California, 16 April 1960 (F. C. Raney), 65/63, 70/66, 64/63.

Types of *M. harrisoni*, see description below.

A MEXICAN MYRMECINA

Up to now, *Myrmecina* has not been collected south of the U. S.-Mexican border, although the collections from southeastern Arizona suggest that it extends southward. We now have established that a population exists even in southern Tamaulipas, a little way south of the Tropic of Cancer. This population appears to represent a hitherto undescribed species.

Myrmecina harrisoni sp. nov. (Fig. 3)

Holotype worker: TL 3.4, HL 0.77, HW (without eyes) 0.75 (CI 97), ML (adjusted because mandibles are partly open) 0.21, WL 0.90, antennal scape L (chord, from basal collar) 0.61 mm.

Sculpture of head and alitrunk coarser than in *M. americana*, costulae thicker, and the spaces between the costulae relatively narrower and with nearly smooth, shining bottoms. Promesonotal disc with costulae strongly diverging anteriorly, forming an irregular triangle with three transverse anterior elements (Fig. 3).

Other characters within the range of variation of eastern *M. americana*; median lobe of clypeus squarely truncate, with lateral and median tubercles present and about equally developed, not very prominent. Scapes not notably flattened at base. Propodeal teeth prominent, diverging, but also straight. Integument of gastric dorsum shining, with "Scotch-grain" shagreening or microreticulation distinct on basal segment.

Color black, shading to castaneous on mouthparts, coxae, and lower petiole and postpetiole; antennae and legs dull yellowish.

Holotype deposited in the Museum of Comparative Zoology, Harvard University. Paratype in the collection of the Department of Entomology, Cornell University.

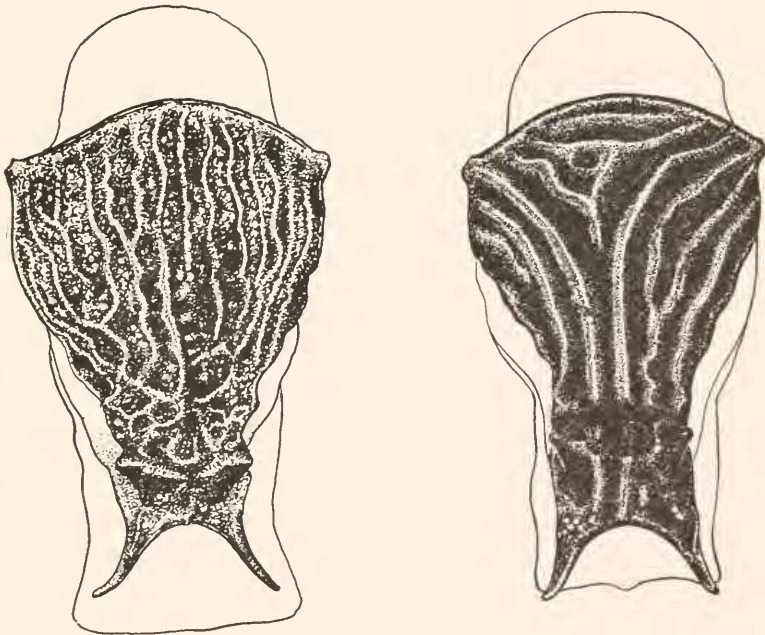
Paratype worker: TL 3.5, HL 0.80, HW 0.76 (CI 95), ML 0.22, WL 0.90, scape L 0.65 mm.

Similar to the holotype, but a trifle larger. Median clypeal lobe with a more concave anterior border, the 3 tubercles somewhat better developed than in holotype. Details of sculpture, color and pilosity almost exactly as in holotype.

Holotype and paratype taken separately from different rotten logs in wet mountain forest dominated by oaks, *Liquidambar*, and *Podocarpus* at about 1,070 m altitude, Rancho del Cielo, Sierra Guatemala, above the village of Gomez Farías in southern Tamaulipas, Mexico, 23 July, 1965 (Cornell University Field Party). This wonderful locality is described by Martin (1958) in his account of the herpetofauna of the Gomez Farías region. The samples were taken in the forest within 500 m of the house of Mr. Francis Harrison, proprietor of Rancho del Cielo, naturalist, and frequent host to itinerant naturalists, to whose memory the species is dedicated. Months after our visit to Rancho del Cielo, "Frank" Harrison was cruelly and senselessly murdered. Let us hope that his attempts to save some part of the northernmost true wet tropical forest in the Western Hemisphere will not have been in vain.

The species *M. harrisoni* was described only after much deliberation. After all, it may prove to be a mere southern geographical variant of *M. americana*, already known from such fairly close areas as Austin, Texas (about 520 miles as the

crow flies) or the Chiricahuas of southeastern Arizona (over 850 miles). Possibly *Myrmecina* samples will eventually be found in the Sierra del Carmen or other ranges south of Texas; if so, they should be helpful in judging the status of *M. harrisoni*. But the specific distinctness of this form is for the present indicated by its sculpture, which is completely outside the known variation of available North American samples, and which sharply reverses the prevailing trend toward reduction seen in the southwestern United States (Compare Figs. 2 and 3).



FIGS. 2 and 3. Sculpture of dorsal surface of alitrunk of North American *Myrmecina* workers of about the same size. FIG. 2 (left), *M. americana* from Marion Co., Arkansas. FIG. 3 (right), *M. harrisoni* sp. nov., holotype.

ACKNOWLEDGMENTS

This investigation was a part of research supported by grants (GB 2175, GB 5574X) from the National Science Foundation. Mr. R. R. Snelling and Dr. M. Wasbauer are thanked for loans of material. Mr. W. H. Gotwald, Jr., helped with Fig. 1, and Figs. 2 and 3 were drawn by Mrs. Margaret Menadue.

REFERENCES

- BROWN, W. L., JR. 1949. *Psyche* 56: 41-49.
———. 1951. *Bull. Brooklyn Ent. Soc.* 46: 101-106.
CREIGHTON, W. S. 1950. *Bull. Mus. Comp. Zool. Harv.* 104. (Cf. p. 246 ff.)
MARTIN, P. S. 1958. *Misc. Publ. Mus. Zool. Univ. Mich.* 101: 102 pp., 7 pl.
MAYR, E. 1942. *Systematics and the origin of species*. New York, Columbia University Press.
SMITH, M. R. 1948. *Proc. Ent. Soc. Wash.* 50: 238-240.
———. 1951. In Muesebeck *et al.*, *Synop. Cat. Hym. Amer. N. Mexico*. U. S. Dept. Agric. Monograph 2; cf. 815.
SNELLING, R. R. 1965. *Bull. S. Calif. Acad. Sci.* 64: 101-105.
WASBAUER, M. 1965. *Coop. Econ. Insect Rept., U. S. Dept. Agric.* 15: 108.
-